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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------------|-------------|----------------------|---------------------|------------------|
| 10/620,352 | 07/17/2003 | Masahiko Umezawa | 00862.023145 | 8915 |
| 5514 | 7590 | 06/29/2005 | EXAMINER | |
| FITZPATRICK CELLA HARPER & SCINTO | | | DO, AN H | |
| 30 ROCKEFELLER PLAZA | | | ART UNIT | |
| NEW YORK, NY 10112 | | | PAPER NUMBER | |

2853

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary

Application No.

10/620,352

Applicant(s)

UMEZAWA, MASAHIKO

Examiner

An H. Do

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 3-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10/28/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 28 October 2003 was filed and is being considered by the examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Imanaka et al (US 6,382,755).

Imanaka et al disclose in Figures 1A-8 the following claimed features:

Regarding claims 1 and 12, a printing apparatus for performing printing by discharging ink from an ink-jet printhead (Figures 6 and 7, IJH), having plural printing elements (Figure 7, heat generators 701) capable of discharging ink droplets in plural sizes, to a print medium (P), comprising:

-input means (Figure 8, input pads 101-(1) to 101-(k)) for inputting print data (column 10, lines 36-37);

-count means (Figure 3, adder 104) for counting a number of concurrently-driven printing elements corresponding to the respective one of the plural sizes, based on the print data inputted by said input means (column 10, lines 42-46);

-determination means (comparator 103) for determining a drive pulse applied to the concurrently-driven printing elements corresponding to the respective one of the plural sizes, based on the result of counting by said count means (column 10, lines 40-42); and

-print means (printhead 1JH) for performing printing by applying the drive pulse determined by said determination means to the concurrently-driven printing elements.

And also therefore teaches a control method in view of the fact that the above structure is taught.

Regarding claim 2, wherein the plural printing elements (Figure 7, heat generators 701) are divided into plural blocks, said print means has time-divisional drive means (AND circuits 417a) for time-divisionally driving said plural printing elements in block units (Figure 8, BLK 1-BLK_n), and said count means counts the number of concurrently-driven printing elements in the block units (Figure 8).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imanaka et al (US 6,382,755) in view of Ishinaga et al (US 5,880,762).

Imanaka et al disclose the claimed invention except for reciting the following claimed features:

Regarding claim 10, wherein said ink-jet printhead has a nozzle array in which a first type of nozzle to discharge a first size of ink droplets and a second type of nozzle to discharge a second size of ink droplets are alternately arrayed.

Regarding claim 11, wherein the first type of nozzle has a first type of electrothermal transducer to generate thermal energy to be supplied to ink for discharging the first size of ink droplets utilizing the thermal energy, and the second type of nozzle has a second type of electrothermal transducer to generate thermal energy to be supplied to ink for discharging the second size of ink droplets utilizing the thermal energy.

Ishinaga et al teach in Figures 10B-10D the following:

Regarding claim 10, wherein said ink-jet printhead has a nozzle array in which a first type of nozzle to discharge a first size of ink droplets (small droplet 114) and a second type of nozzle to discharge a second size of ink droplets (large droplet 115) are alternately arrayed.

Regarding claim 11, wherein the first type of nozzle has a first type of electrothermal transducer (small heater 2b) to generate thermal energy to be supplied to ink for discharging the first size of ink droplets (small droplet 114) utilizing the thermal energy, and the second type of nozzle has a second type of electrothermal transducer

(large heater 2a) to generate thermal energy to be supplied to ink for discharging the second size of ink droplets (large droplet 115) utilizing the thermal energy.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have different types of transducers with different sizes of droplets, as taught by Ishinaga et al into Imanaka et al, for the purpose of accomplishing high image quality recording with high tone gradient and improved ejection efficiency (column 2, lines 18-20).

Allowable Subject Matter

7. Claims 3-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claims 3-9 is the inclusion of the limitation of a printing apparatus for performing printing by discharging ink from an ink-jet printhead that includes a second counter that counts the number of concurrently-driven printing elements, among a second group of printing elements corresponding to discharge of second size of ink droplets. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



An H. Do
June 21, 2005